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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,792	10/05/2006	Karlheinz Bing	BING ET AL. - 9 PCT	8699
25889	7590	11/12/2008		
COLLARD & ROE, P.C. 1077 NORTHERN BOULEVARD ROSLYN, NY 11576			EXAMINER NGUYEN, HUNG Q	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/589,792	Applicant(s) BING ET AL.	
	Examiner HUNG Q. NGUYEN	Art Unit 3741	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/05/2006, 08/17/2006</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is responsive to the preliminary amendment filed on 08/17/2006. As directed by the amendment: claims 1-14 have been amended. Thus, claims 1-14 are presently pending in this application.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

4. The abstract of the disclosure is objected to because of the inclusion of the phrase "said". Correction is required. See MPEP § 608.01(b).

Claim Objections

5. Claims 1-14 are objected to because of the following informalities:

Claim 1, line 1, the preamble "Cylinder sleeve" should be replaced with --A cylinder sleeve--. On line 2, "the outer surface" should be replaced with --an outer

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surface--. On lines 8-9, the recitation "*the outer surface of which has a roughened region reaching over its entire axial length*" should be deleted from the claim since it has already been recited on lines 2-3.

Claims 2-14, line 1, the preamble "Cylinder sleeve" should be replaced with --The cylinder sleeve--.

With regards to claims 6 and 7, the recitations "at a constant depth" in line 4 should be replaced with --having a constant depth--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claim 1 recites the limitation "the crankcase" in line 6. There is insufficient antecedent basis for this limitation in the claim.

9. Claim 8 recites the limitation "the at least one flattened region" in line 3. There is insufficient antecedent basis for this limitation in the claim.

10. Claim 9 recites the limitation "the spin casting method" in line 3. There is insufficient antecedent basis for this limitation in the claim.

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11. Claims 11-13 recite the limitations "the gravity casting method", "the spin casting method" and "the lost-foam casting method". There are insufficient antecedent basis for these limitations in the claims.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. **Claims 1, 2 and 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dickmann et al. (PG Pub. 2003/0084567 A1) in view of Field et al. (US 4,903,652).**

14. **Regarding claim 1**, as best understood, Dickmann et al. ('567) discloses a cylinder sleeve 1 (fig. 1, 3-6) for an internal combustion engine, the outer surface of which has at least one roughened region (see fig. 4 & 5) reaching over its entire axial length, and having at least one undercut 6 (fig. 7) wherein the cylinder sleeve is configured as a rough-cast sleeve (p. 1, par. [0008]), and consisting of a plurality of elevations 7 with undercuts 6 (fig. 7).

However, Dickmann ('567) fails to disclose a cylinder sleeve having at least one engagement segment having at least one projection, at least in its lower region, facing a crankcase.

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Field ('652) disclose a cylinder sleeve 102 (fig. 1-3) having at least one engagement segment having at least one projection 112, at least in its lower region (col. 1, lines 58-67), facing a crankcase (not shown).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cylinder sleeve as taught by Dickmann ('567) to incorporate an engagement segment having at least one projection, at least in its lower region, facing the crankcase, as suggested and taught by Field ('652), for the purpose of providing a more compact, lighter weight engines while allowing better heat transfer characteristics between cylinders (col. 2, lines 8-15).

15. **Regarding claim 2**, Dickmann ('567) discloses the claimed invention except for the height of the elevations 7 (fig. 7) amounts to 0.2 mm to 2 mm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the cylinder sleeves having an elevation height between 0.2 mm to 2 mm in order to increase the mechanical meshing with a casting material that flows around the cylinder sleeves during casting, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

16. **Regarding claim 8**, Field ('652) also teaches the at least one flattened region (fig. 2-3, this is the region connecting the cylinder sleeves 102 together) is provided with a step 112 having a flattened region lying radially on the outside, on its lower side facing the crankcase (col. 1, lines 58-67).

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17. **Regarding claims 9-13**, the claimed phrases “gravity casting”, “spin casting” and “lost-foam” are being treated as product-by-process limitations and since it has been held that a product-by-process limitation is not construed as being limited to the product formed by the specific process recited, therefore, even though Dickmann et al. ('567) is silent as to the process used to produce the cylinder sleeves, it appears that the Dickmann's product would be the same or similar as that claimed, especially since both applicant's product and the prior art product is made of aluminum-silicon alloy or cast iron material (p. 4, claims 4-6).

18. **Claims 3, 4 and 6, are rejected under 35 U.S.C. 103(a) as being unpatentable over Dickmann / Field as applied to claim 1 above, and further in view of Gobbels et al. (US 6,182,629 B1).**

19. **Regarding claims 3 and 6**, Dickmann / Field teach a cylinder sleeve wherein the outer shape of the cylinder sleeve has a constant depth of the roughened region (see fig. 4 of Dickmann '567).

However, Dickmann / Field fail to teach a cylinder sleeve comprising an outer contour that is elliptical in cross-section, wherein the outer shape of the cylinder sleeve is formed by means of a sleeve wall thickness that varies over the circumference.

Gobbels et al. ('629) teach a cylinder sleeve (fig. 4) comprising a sleeve wall thickness 3" that varies over the circumference of the cylinder sleeve.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cylinder sleeve as suggested by Dickmann / Field to incorporate a cylinder sleeve having an elliptical cross-section wherein a

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cylinder sleeve wall thickness varies over the circumference, as suggested by Gobbels, for the purpose of preventing the occurrence of distortions during engine operation (col. 1, lines 54-56), and reducing the over size of the sleeves, thus reducing the overall size of the engine block.

20. **Regarding claim 4**, Dickmann / Field disclose the invention as essentially claimed except for an outer contour that consists, in cross-section, of four arc-shaped segments that are approximately the same size.

Gobbels et al. ('629) teach a cylinder sleeve (fig. 5) comprising an outer contour that consists, in cross-section, of four arc-shaped segments that are approximately the same size.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cylinder sleeve as suggested by Dickmann / Field to incorporate a cylinder sleeve having an outer contour that consists, in cross-section, of four arc-shaped segments that are approximately the same size, as suggested by Gobbels, for the purpose of preventing the occurrence of distortions during engine operation (col. 1, lines 54-56).

21. **Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dickmann / Field as applied to claim 1 above, and further in view of Gohrbandt et al. (PG Pub. 2005/0150476 A1).**

22. Dickmann / Field disclose the invention as essentially claimed except for an outer contour that consists, in cross-section, of two arc-shaped segments that lie opposite one another, and two flat segments that lie opposite one another.

Gohrbandt ('476) discloses a cylinder sleeve (fig. 2, cylinder sleeve 3a) comprising an outer contour that consists, in cross-section, of two arc-shaped segments that lie opposite one another, and two flat segments that lie opposite one another.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cylinder sleeve as suggested by Dickmann / Field to incorporate a cylinder sleeve having an outer contour that consists, in cross-section, of two arc-shaped segments that lie opposite one another, and two flat segments that lie opposite one another, as suggested by Gohrbandt ('476), for the purpose of reducing the size of the cylinder sleeve assembly while reinforcing the stability of the cylinder sleeves during engine operation.

23. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dickmann / Field / Gobbels, as applied to claims 1 and 3 above, and further in view of Fuganti et al. (PG Pub. 2003/0000086 A1).

24. The combined references disclose the invention as essentially claimed having a constant sleeve wall thickness (see fig. 1 & 7 of Dickmann '567) except for the outer shape of the cylinder sleeve is formed by a depth of the roughened region that varies over the circumference.

Fuganti ('086) discloses a cylinder sleeve 10 (fig. 1-4) wherein the outer shape of the cylinder sleeve is formed by a depth of the roughened region (fig. 2-4) that varies over the circumference of the sleeve (p. 2, par. [0019]).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cylinder sleeve, as suggested by the

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combined references, to incorporate a cylinder sleeve having a roughened region with a variable depth, as suggested by Fuganti ('086), for the purpose of providing a mechanical anchoring between the liner and the cylinder block (p. 2, par. [0019]).

25. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dickmann / Field as applied to claim 1 above, and further in view of Nakamura et al. (US 4,419,971).

26. Dickmann / Field disclose the invention as essentially claimed except for a cylinder sleeve consists of a sintered metal.

Nakamura ('971) discloses a cylinder liner for an internal combustion engine consisting of a sintered material (col. 2, lines 34-45).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture the cylinder sleeve, as suggested by Dickmann / Field, with a sintered material suggested by Nakamura ('971), for the purpose of providing good resistance to heat stress and wear resistance (col. 1, lines 28-33).

Applicant is duly reminded that a complete response must satisfy the requirements of 37 C.F. R. 1.111, including: "The reply must present arguments pointing out the specific distinctions believed to render the claims, including any newly presented claims, patentable over any applied references. A general allegation that the claims "define a patentable invention" without specifically pointing out how the language of the claims patentably distinguishes them from the references does not comply with the requirements of this section. Moreover, "The prompt development of a clear Issue

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requires that the replies of the applicant meet the objections to and rejections of the claims." Applicant should also specifically point out the support for any amendments made to the disclosure. See MPEP 2163.06 II(A), MPEP 2163.06 and MPEP 714.02. The "disclosure" includes the claims, the specification and the drawings.

Conclusion

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

28. Koyama et al. (US 6298818 B1) disclose a cylinder liner having a roughened region or a rough-casting surface with undercuts.

29. Kubis et al. (US 4616603) disclose a cylinder liner having an engagement segment joining adjacent cylinder liners near the crankcase end.

30. Hill et al. (US 6557513 B1) disclose a cylinder liner having an elliptical cross-section.

31. Takami et al. (US 5732671) disclose a cylinder liner package having engagement segments, and manufactured using cast iron.

32. Lutz (US 4630345) discloses a cylinder liner having an elliptical cross-section.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUNG Q. NGUYEN whose telephone number is (571) 270-5424. The examiner can normally be reached on Mon-Thu 8am - 4pm and alternate Friday off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MICHAEL CUFF can be reached on (571) 272-6778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. Q. N./
Examiner, Art Unit 3741

/Michael Cuff/
Supervisory Patent Examiner, Art Unit 3741